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NIST
PUBLICATIONS

NIST Special Publication 791

*State Weights and Measures Laboratories:
State Standards Program Description
and Directory*

Georgia L. Harris

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United States Department of Commerce
National Institute of Standards and Technology

Research Information Center
Gaithersburg, MD 20899

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State Weights and Measures Laboratories: State Standards Program Description and Directory

Georgia L. Harris

Office of Weights and Measures
National Institute of Standards and Technology
Gaithersburg, MD 20899

(Supersedes Special Publication 686)

June 1990



U.S. Department of Commerce
Robert A. Mosbacher, Secretary

National Institute of Standards and Technology
John W. Lyons, Director

National Institute of Standards
and Technology
Special Publication 791
(Supersedes SP686)
Natl. Inst. Stand. Technol.
Spec. Publ. 791
68 pages (June 1990)
CODEN: NSPUE2

U.S. Government Printing Office
Washington: 1990

For sale by the Superintendent
of Documents
U.S. Government Printing Office
Washington, DC 20402

Foreword

In support of its mission to promote uniform standards of measurement throughout the country, the National Institute of Standards and Technology (NIST) received funding in 1965 to provide new standards of mass, length, and volume to State weights and measures laboratories. This program, called the [New] State Standards Program, also provided the equipment needed to perform calibrations in these measurement areas.

To maintain the validity of these standards and to assure that the standards are used properly, NIST:

- (1) trains State metrologists in the test procedures used in the NIST laboratories; and
- (2) conducts a voluntary certification program for State weights and measures laboratories.

Part I describes the certification program. As part of the certification program, NIST requires that:

- (1) the State has adequate facilities in which to perform the measurements;
- (2) the State metrologist receives the necessary training and submits data demonstrating the results of applying test procedures; and
- (3) the laboratory establish measurement control programs acceptable to NIST in the various measurement areas.

Part II is the directory of State weights and measures laboratories and lists the services they provide to State and local weights and measures agencies as well as to industry. The directory is intended to assist potential users of the laboratory services in locating and obtaining needed measurement services. The directory provides the following information for each State or certified laboratory:

- (1) the certification period, if certified by NIST;
- (2) the laboratory staff member(s), address, and phone number;
- (3) services available; and
- (4) fees, if any, for services.

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PART I - Program Description

Introduction

Weights and Measures Laboratories

In 1965, Congress funded NIST for the [New] State Standards Program. This program was established to provide new standards of mass, volume, and length to the States, the District of Columbia, Puerto Rico, and the Virgin Islands to update their weights and measures laboratories and increase their measurement capabilities. The program also provided the laboratory equipment necessary for the States to use the standards in their measurement services.

The standards and equipment were issued to the States from 1967 through 1978. Since that time, many States have purchased additional equipment to increase their measurement capability and to expand into other measurement areas, such as liquid-in-glass thermometry, the frequency testing of tuning forks for police radar guns, and the testing of large volume and liquified petroleum gas (LPG) provers.

Prior to receipt of the standards and equipment, each jurisdiction was required to provide a laboratory facility meeting specifications established under the State Standards Program. The laboratory metrologist was required to complete training at NIST in the use of the standards and the equipment.

Subsequent to the establishment of the State Standards Program, NIST instituted a program whereby State weights and measures laboratories are certified by measurement areas. NIST does not certify the measurements made by a State, but only

recognizes an apparent capability to perform reliable measurements and that the metrologist has been trained in the proper procedures to provide these measurements. The certification also indicates that the metrologist has fulfilled the requirements and submitted the data requested by NIST for certification. Each State laboratory is responsible for verifying its measurement traceability.

If a laboratory has not been certified, this does not imply that the laboratory is inadequate or that its measurements are not valid. Rather, it indicates that a laboratory has not submitted the information necessary to permit NIST to evaluate its capability. Consequently, NIST cannot take a position regarding the capability of the noncertified laboratory.

National Type Evaluation Program

Under the National Type Evaluation Program (NTEP), new weighing and measuring devices are tested and evaluated to determine if they comply with the requirements in NIST Handbook 44, "Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices" [1] (see references p. 8). The Program is administered by NIST in support of the National Conference on Weights and Measures. Tested devices are intended for use in the commercial measurement system, that is, for use in weighing or measuring commodities to be sold to the general public.

Several State laboratories have acquired the capability, and have been authorized by NIST, to conduct type evaluations under the NTEP. These laboratories, and the devices that they are

authorized to evaluate, are identified in this publication.

Certified Measurement Areas

A brief summary of each measurement area in the certification program is given under the headings of Tolerance Testing and Calibration. Some States offer services in other measurement areas (see Part II) but, since NIST has not developed criteria to serve as the basis for laboratory certification in these areas, they are not included in the certification program.

Each laboratory certified in a given area has been judged to be capable of providing the measurement services indicated. The range of standards that can be tested by a laboratory will depend upon the equipment it has purchased in addition to that received through the State Standards Program.

A general classification of the range of standards that can be tested is indicated by the headings in the tables of services available (see Part II). The mass classifications for tolerance testing are given in pounds because inch-pound standards are usually used. Mass classifications for calibrations are given in kilograms because metric standards are used. Comparable standards in other mass units of measure can also be tested.

Tolerance testing

A tolerance may be simply defined as the permitted difference between the nominal value of the standard and its actual value under specific conditions. Tolerance testing is the process for determining if the actual value of a standard is within tolerance. To be certified to a tolerance class, a standard must comply with the specifications and tolerances for the specified tolerance class.

Mass

Tolerance testing of mass standards is usually done according to specifications included in:

NIST Handbook 105-1 [2]

- American Society for Testing and Materials (ASTM) Standard E617, Classes 4, 5, and 6 [3]
- NBS Circular 547, Classes P, Q, and T [4]
- NBS Circular 3, Classes A, B, and C [5].

Tolerance testing to International Organization of Legal Metrology tolerances of classes F_2 , M_1 , and M_2 and other tolerances can be performed upon request [6].

Volume

Tolerance testing of volume standards is divided into small-, intermediate-, and large-volume standards depending upon the laboratory standards to be used. A small-volume standard may have a capacity up to 25 gallons. The capacities of intermediate-volume standards range from 25 through 500 gallons. Large-volume standards have capacities in excess of 500 gallons.

Glassware standards may be tested to NBS Handbook 105-2 [7] specifications and tolerances or to the tolerances stated in Federal regulations. Metal field standards are tested to NBS Handbook 105-3 [8] specifications and tolerances.

Calibration

Calibration is the process of comparing an unknown standard to a known standard and assigning a value, along with an uncertainty, to the unknown standard. The uncertainty expresses the extent to which that assigned value may be in error relative to its reference base, which typically is the national standard.

When calibrated by a State laboratory, the assigned value may or may not be within the specified tolerance. The correction and uncertainty assigned to the standard should therefore be used in subsequent measurements. In some cases, the assigned uncertainties will exceed the specified tolerances. The uncertainties, which reflect the level of precision the State laboratories can achieve, will differ from one laboratory to another depending on standards, the competence of the

metrologist, and equipment available to perform the measurement. Potential customers should contact the State weights and measures laboratory to verify that the assigned uncertainty is adequate for their needs.

Mass

Calibrations are usually performed on mass standards designed to meet specifications and tolerances in:

- American Society for Testing and Materials (ASTM) Standard E617, Classes 1, 2, and 3
- NBS Circular 547, Classes J, M, S, and S-1
- International Organization of Legal Metrology Classes E_2 and F_1 .

Depending on the laboratory, air buoyancy corrections may or may not be made. Customers should specify the apparent mass reference density desired for their calibration and the density of their mass standards.

Volume

Small glassware standards are usually calibrated gravimetrically or by volume transfer. The capacity of metal standards is typically 5 gallons or 20 liters.

Length

Steel tapes up to several hundred feet may be calibrated. The uncertainties are typically a few thousandths of a foot. Rigid rules up to 12 inches can be calibrated with uncertainties of several thousandths of an inch.

Frequency

The frequency calibration services are usually limited to tuning forks used with police radar guns.

Temperature

Temperature calibration is generally limited to liquid-in-glass thermometers. Some States test only clinical thermometers of this type. The standards for most States are also liquid-in-glass

thermometers. The uncertainties for temperature calibration will vary differ among laboratories. Many requests for calibrations involve tolerances specified by the customer.

National Type Evaluation Program

NIST will authorize qualified State laboratories to: (1) conduct complete testing and evaluation; or (2) conduct field performance testing of specified types of devices under the NTEP. Type evaluations are primarily conducted on scales, weighing systems, meters, metering systems, and devices associated with these applications. The specific types of devices for which a laboratory is authorized to evaluate are identified in the directory.

Unevaluated Measurement Areas

In addition to the certified measurement areas of tolerance testing, calibration, and device type evaluations, many laboratories perform measurements for which the NIST Office of Weights and Measures has not established guidelines for certification. These measurement areas can include the testing of dial gauges used to test polyethylene sheeting (an extension of dimensional measurements) or entire programs such as grain moisture testing and petroleum quality testing. This edition of this special publication contains new information regarding some of these tests; future editions will contain a more thorough listing of unevaluated measurement services provided by the laboratories listed in this directory.

Certification Requirements

Weights and Measures Laboratory Requirements

There are three general requirements for certification of the weights and measures metrology laboratories:

- (1) The State must have adequate laboratory facilities and equipment to provide the services that are offered.
- (2) The metrologist must: (a) successfully complete NIST Basic Metrology Seminar;

(b) maintain competency through participation in the Regional Measurement Management Programs (RMMPs); and (c) demonstrate the ability to perform the laboratory measurements, which may be done through the RMMPs, NIST Intermediate Metrology Seminar, or special assignments.

- (3) The metrologist must implement and maintain measurement control programs in various measurement areas as required by NIST.

The requirements for the laboratory facilities and general operation are contained in NBS Handbook 143, "State Weights and Measures Laboratories - Program Handbook" [9]. Each laboratory is evaluated using a self-appraisal checklist (contained in Handbook 143), submitted by the metrologist, subject to verification by an on-site evaluation.

The metrologist is evaluated on the basis of performance in training seminars, the work submitted to NIST as part of the laboratory assignments, participation in technical meetings, and through review of laboratory data and test procedures during the on-site evaluation. The quality of the laboratory's measurement results are evaluated through its control charts and round robin experiments. Brief discussions of these topics follow.

Training and Evaluation

Basic Training

NIST trains State metrologists in the basic laboratory metrology procedures for mass, volume, and length measurement during a 2-week seminar. The test procedures are described in NIST publications, many of which are in NBS Handbook 145, "Handbook for the Quality Assurance of Metrological Measurements" [10]. The metrologists must then complete a series of laboratory assignments and submit the data to NIST to document their understanding of the procedures and the calculations. Additional laboratory problems are assigned to each

laboratory to establish measurement control programs in several measurement areas.

Intermediate and Advanced Training

Each metrologist is expected to attend the Intermediate Metrology Seminar to receive additional training in the laboratory procedures and in the corrections needed for high precision measurement. Following this seminar, the metrologists are assigned a series of problems to demonstrate their understanding of the seminar material.

States that expand into other areas of measurement are encouraged to attend specialized seminars conducted by NIST calibration laboratories. Examples of these areas are temperature and pressure measurements. The laboratories must then establish measurement control programs in these measurement areas to assure agreement with NIST results.

Regional and National Programs

Each State must participate in Regional Measurement Management Programs (RMMPs). These RMMPs are groups of laboratories in given geographical areas that have joined together to: (1) conduct meetings for the purpose of training and demonstration of procedures; and (2) to conduct round robin experiments to promote uniform measurements in their geographical area. The round robin experiments provide an essential link in the measurement traceability from the States to NIST. The knowledge exhibited by metrologists in these meetings and their results on the round robin experiments are included as part of the evaluation of the State laboratories.

In addition to training seminars and regional metrology groups, the Metrology Workshop at the annual meeting of the National Conference on Weights and Measures (NCWM) coordinates the efforts of the regional groups and provides the opportunity for metrologists to become active in weights and measures metrology issues of a national and international nature. The knowledge and participation demonstrated by the metrologists at the annual workshops as well as participation throughout the year in NCWM/NIST work projects afford metrologists the opportunity to provide

technical input to the NCWM. This activity not only enhances the NCWM program and the metrologist's skills and abilities, but allows further evaluation of metrologists' special capabilities.

Measurement Control

NIST criteria require State weights and measures laboratories to utilize formal quality control techniques to ensure that their measurements are sufficiently accurate to meet their needs on a continuing basis. If such techniques are properly employed, it is possible to quantify the uncertainties of the measurements. Monitoring them over time can assure that they remain sufficiently small to meet operational requirements. NIST has been working closely with the State weights and measures laboratories to help them improve and demonstrate their ability to perform high-quality calibrations.

Measurement control programs have been established for mass calibration and the volume transfer testing of glass volume standards. These programs will be expanded into the other measurement areas. Round robin experiments are conducted to investigate the agreement of the State laboratories in the other measurement areas.

The measurement control programs consist of two parts: (1) internal control programs; and (2) external control programs.

Internal Control Programs

The internal measurement control programs generally consist of repeated measurements on the same objects over an extended period of time. The data are then plotted on control charts to establish the limits of random errors in the measurement processes. Repeated measurements made on the standards themselves monitor the standards as well as the variability of the measurement process. Statistical confidence tests monitor the stability of the standards and the variance of the measurement process. The control chart data can be used to document the validity of the measurements made on a given day. Finally, the control chart data are used to determine if the standards agree with NIST-reported values. Disagreement with NIST-reported values requires corrective action. If a

problem persists, the standards must be recalibrated at NIST.

In some measurement areas it is not possible to keep a standard or standards in the laboratory simply for the purpose of measurement control. For example, it is impractical to keep an extra 100-gallon prover in the laboratory to run as a check standard during every 100-gallon prover test. In these instances, repeated measurements are run on each standard submitted for test. Differences in test results are then plotted on a "range" chart. The process variance is estimated from the range in the measurements made on many standards. The range chart is also used to verify that repeated measurements made on a given standard fall within the indicated limits.

In some instances, such as the volume transfer testing of glass flasks, a combination of control and range charts is used. The type of measurement control program depends on the criticality of the measurements, the availability of standards to use as "check" standard, and the tolerances for the standards under test. The frequency of measurements made to control the measurement process and the type of control program utilized are tailored to the measurement area under investigation.

External Control Programs

The NIST goal is to provide an external measurement control system that is available to all States. The overall goal is for each State to participate in one of the five Regional Measurement Management Programs (RMMPs). The RMMPs promote uniform measurement results by:

- (1) providing training through the presentation of papers prepared by members;
- (2) demonstrating test procedures to assure uniformity;
- (3) conducting round robin experiments to investigate the presence of measurement errors; and
- (4) addressing mutual problems.

The RMMPs are groups of State and, to a limited extent, private laboratories that have joined

together to conduct meetings and perform round robin tests in mass, length, and volume to promote uniformity in test procedures and measurement results. The five RMMPs listed below provide the opportunity for all States, the District of Columbia, Puerto Rico, and the Virgin Islands to participate. A map of the regional groups is shown in figure 1.

- (1) Northeastern Measurement Assurance Program (NEMAP)
- (2) Southeastern Measurement Assurance Program (SEMAP)
- (3) Western Regional Management Group (WRMG)
- (4) Mid-America Measurement Assurance Program (MidMAP)
- (5) Southwestern Assurance Program (SWAP)

In the external measurement control programs, standards external to the laboratory are submitted to the laboratory for test. These external standards are normally calibrated by NIST to provide a reference value. These standards are usually circulated as part of round robin experiments conducted and coordinated by the RMMPs. Although NIST provides values for the circulating standards, the round robin experiments are developed, coordinated, and analyzed by the RMMPs. NIST participates in the data analysis and the regional meetings to identify any problems and to provide training to eliminate discrepancies. This information is vital to the NIST certification program. The RMMPs are thus an integral part of the NIST certification program and reduce the amount of NIST effort necessary to monitor State laboratories.

The external measurement control programs are used to compare the RMMP results to NIST values. These programs investigate the presence of systematic errors and can be used to test the variance of the measurement processes. Plots of interlaboratory data results are frequently used to analyze data. To obtain maximum benefits from these external measurement control programs, internal measurement control programs should be established before a laboratory participates in round robin experiments.

Uniformity among RMMPs is attained through additional NIST training at the meetings, the calibration of standards used in round robin experiments, and the evaluation of the round robin results. The RMMPs interact further through the Metrology Workshop held in conjunction with the Annual Meeting of the National Conference on Weights and Measures. Members of each RMMP report activities and round robin results and discuss ways of improving the quality of the laboratories as well as individual proficiency.

National Type Evaluation Program Requirements

The objectives of the authorization plan of the National Type Evaluation Program are to:

- (1) promulgate uniform criteria and procedures for testing laboratories;
- (2) authorize those qualifying laboratories in the Program;
- (3) assure the uniform application of NTEP device evaluation criteria; and
- (4) provide the basis for acceptance by the states of the evaluations conducted in the authorized State laboratories.

To be authorized, laboratories must demonstrate that they have the staff, equipment, and resources to conduct the evaluations. The ability to conduct type evaluations is heavily dependent on the people who do the evaluations. They must have knowledge of Handbook 44 requirements, device applications, and test procedures. They must also have the analytical skills and judgment to determine whether the requirements are satisfied.

Because the nature of type evaluations is very different from laboratory metrology, staff other than the laboratory metrologist are often authorized to conduct type evaluations for NTEP.

Type evaluations may include both laboratory and field tests. A State must have the specialized equipment required to test a device over a temperature range (i.e., an environmental chamber along with other specialized equipment). Field evaluations require much of the same equipment used in weights and measures enforcement testing, but the test procedures are much more extensive.

NIST provides extensive training on the NTEP criteria, test procedures, and the rationale behind the requirements. The laboratory staff must demonstrate a thorough knowledge of the criteria and test procedures, the ability to properly analyze the test data and device performance as it pertains to the device applications, and demonstrate the ability to make judgments consistent with NTEP policy. Regular communication with NIST regarding new device features and evaluation criteria is required to maintain uniformity among the NTEP laboratories.

Summary

In order to be certified in a particular measurement area, each State must have a trained

metrologist and an adequate facility, and must demonstrate on a continuing basis that it is capable of providing valid measurements. Certification by NIST indicates that the laboratory is capable of providing a measurement service, but each State must verify its own measurement traceability.

The directory of laboratories in Part II summarizes the certified areas of measurement each State is qualified to perform and provides detailed information to assist industry and government agencies in locating laboratories that provide needed measurement services, including some measurement areas not evaluated.

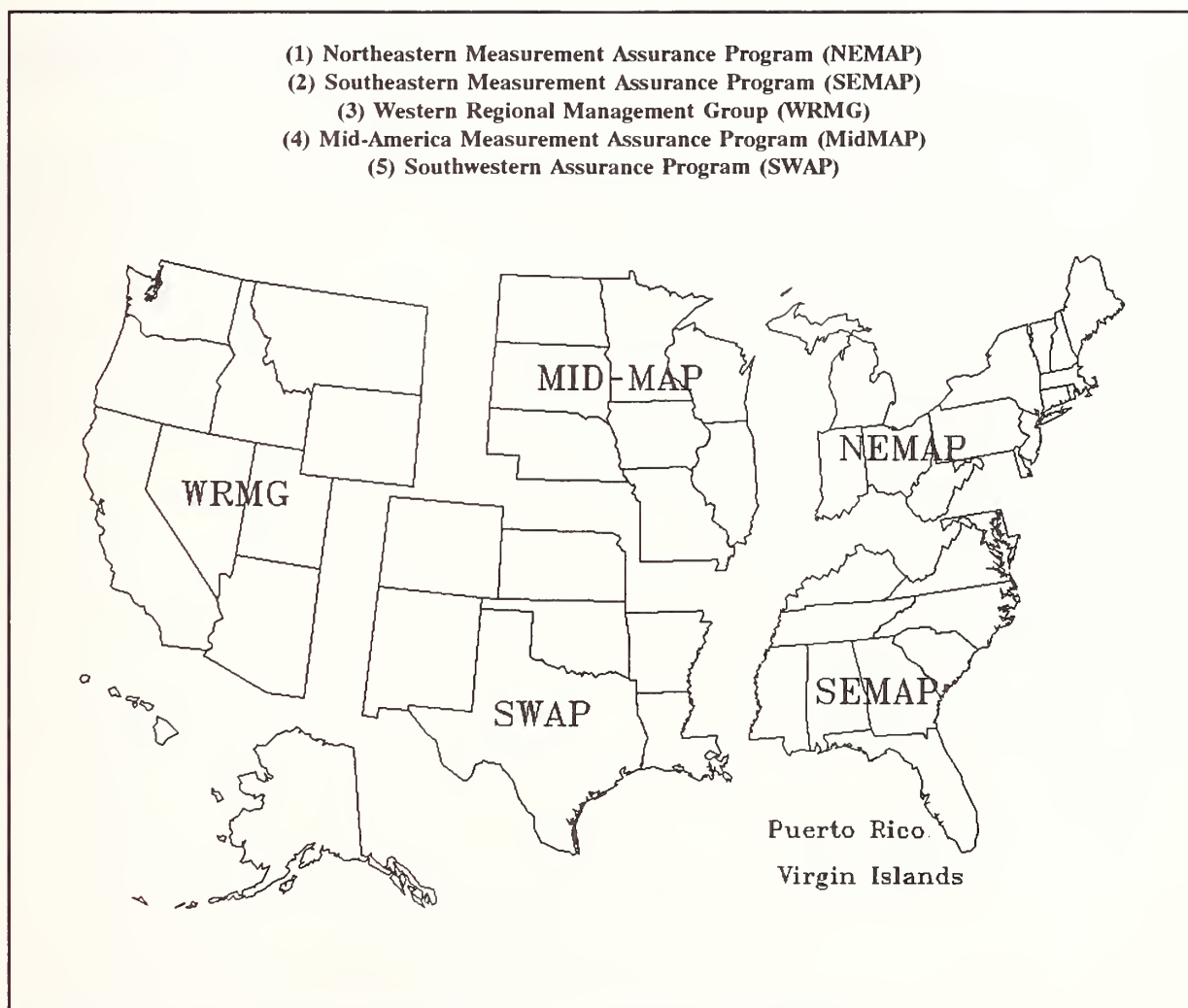


Figure 1. Regional Measurement Management Programs (RMMPs, see p. 6).

References

- [1] Oppermann, H. V., editor, Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices, NIST Handbook 44, 1990.
- [2] NIST Handbook 105-1 (Revised 1990), Specifications and Tolerances for Reference Standards and Field Standard Weights and Measures. 1. Specifications and Tolerances for Field Standard Weights (NIST Class F).
- [3] ASTM (American Society for Testing and Materials) E 617-81 (Reapproved 1985) Standard Specification for Laboratory Weights and Precision Mass Standards, ASTM, Philadelphia, PA 19103.
- [4] NBS Circular 547, Section 1, Precision Laboratory Standards of Mass and Laboratory Weights, 1954, out of print.
- [5] NBS Circular 3, Design and Test of Standards of Mass, out of print.
- [6] OIML (International Organization of Legal Metrology), International Recommendation Numbers 1, 2, 20, 25, 47, 52.
- [7] NIST Handbook 105-2 (Revised 1971), Specifications and Tolerances for Reference Standards and Field Standard Weights and Measures. 2. Specifications and Tolerances for Field Standard Measuring Flask.
- [8] NIST Handbook 105-3 (Revised 1979), Specifications and Tolerances for Reference Standards and Field Standard Weights and Measures. 3. Specifications and Tolerances for Graduated Neck Type Volumetric Field Standards.
- [9] Oppermann, H. V., Taylor, J. K., State Weights and Measures Laboratories, Program Handbook, NBS/HB 143 (1985).
- [10] Taylor, J. K., Oppermann, H. V., Handbook for the Quality Assurance of Metrological Measurements, NBS/HB 145 (1986).

PART II - Laboratory Directory

The following information is given for each State or certified laboratory (in alphabetical order):

- (1) the certification period, if certified by NIST;
- (2) the laboratory staff member(s), address, and phone number;
- (3) services available; and
- (4) fees, if any, for services.

Alabama

Certification Period: 1989-1991

Laboratory Staff	Address	Telephone Number
John B. Rabb, Metrologist John W. Campbell, Metrologist Terry Snow, Metrologist	Division of Weights & Measures PO Box 3336 Montgomery, AL 36193	(205) 242-2652

Services Available					
Tolerance Testing			Calibration		
Mass	Weight \leq 1000 lb	F	Mass	Weight \leq 3 kg	F
	Weight > 1000 lb	F		Weight > 3 kg	F
Volume	Small \leq 25 gal	F	Volume	Metal Standards	F
	Intermediate 25 - 500 gal	F		Small Glassware	F
	Large > 500 gal	F			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	F
				Rigid Rules	F
			Frequency	Tuning Forks	X
			Temperature	Liquid in Glass Thermometry	X

Fees
Labor...\$25 per hour. Registered service agents and parent organization are exempt from fees.

Alaska

Certification Period: 1988-1990

Laboratory Staff	Address	Telephone Number
Darrel E. Cavender, Metrologist	Department of Commerce and Economic Development 12050 Industrial Way, Bldg "O" Anchorage, AK 99515 PO Box 111686, Anchorage, AK 99511	(907) 345-7750 FAX: (907) 345-2641

Services Available					
Tolerance Testing			Calibration		
Mass	Weight ≤ 1000 lb	N	Mass	Weight ≤ 3 kg	N
	Weight > 1000 lb	N		Weight > 3 kg	N
Volume	Small ≤ 25 gal	N	Volume	Metal Standards	N
	Intermediate 25 - 500 gal	N		Small Glassware	N
	Large > 500 gal	N			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	N
				Rigid Rules	N
			Frequency	Tuning Forks	N
			Temperature	Liquid in Glass Thermometry	X

Fees
No fees are charged.

Arizona

Certification Period: 1989-1991

Laboratory Staff	Address	Telephone Number
Kelleen K. Moody, Metrologist Anthony DeArcos, Metrological Technician	Dept of Weights and Measures 1951 West North Lane Phoenix, AZ 85021	(602) 255-5211 FAX: (602) 255-1950

Services Available					
Tolerance Testing			Calibration		
Mass	Weight \leq 1000 lb	F	Mass	Weight \leq 3 kg	F
	Weight > 1000 lb	F		Weight > 3 kg	F
Volume	Small \leq 25 gal	F	Volume	Metal Standards	F
	Intermediate 25 - 500 gal	F		Small Glassware	F
	Large > 500 gal	X			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	F
				Rigid Rules	F
			Frequency	Tuning Forks	X
			Temperature	Liquid in Glass Thermometry	X

Fees
Labor....\$25 per hour.

Arkansas

Certification Period: 1990-1992

Laboratory Staff	Address	Telephone Number
Billy W. Sullivant, Laboratory Supervisor Charles Kirspel, Jr., Metrologist Randall W. Burns, Metrologist, Moisture Meter Lab	Weights and Measures Division Arkansas Bureau of Standards 4608 West 61st St Little Rock, AR 72209	(501) 371-1759

Services Available					
Tolerance Testing			Calibration		
Mass	Weight \leq 1000 lb	N	Mass	Weight \leq 3 kg	N
	Weight $>$ 1000 lb	N		Weight $>$ 3 kg	N
Volume	Small \leq 25 gal	N	Volume	Metal Standards	N
	Intermediate 25 - 500 gal	N		Small Glassware	N
	Large $>$ 500 gal	N			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	N
				Rigid Rules	N
			Frequency	Tuning Forks	X
			Temperature	Liquid in Glass Thermometry	X

Fees
No fees are charged.

California

Certification Period: 1990-1992

Laboratory Staff	Address	Telephone Number
Joseph Rothleder, State Metrologist	Division of Measurement Standards	(916) 366-5119
Thomas S. Fletcher, Msmt Stds Specialist III	Dept of Food and Agriculture	
Walter Camozzi, Msmt Stds Specialist II	8500 Fruitridge Rd	FAX: (916) 366-5179
	Sacramento, CA 95826	

Services Available					
Tolerance Testing			Calibration		
Mass	Weight \leq 1000 lb	F	Mass	Weight \leq 3 kg	F
	Weight > 1000 lb	F		Weight > 3 kg	F
Volume	Small \leq 25 gal	F	Volume	Metal Standards	F
	Intermediate 25 - 500 gal	F		Small Glassware	F
	Large > 500 gal	F			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	F
				Rigid Rules	F
			Frequency	Tuning Forks	X
			Temperature	Liquid in Glass Thermometry	F

Fees
Labor...\$50 per hour.

Remarks:

Temperature calibration is provided using a platinum resistance thermometer standard.

NTEP:

California is an authorized NTEP laboratory for scales and liquid measuring devices. Examination fees being changed at the time of publication. Contact Steve Cook: (916) 366-5376.

Colorado

Certification Period: 1990-1992

Laboratory Staff	Address	Telephone Number
Jerry Wagner, Chief Metrologist William L. Young, Metrologist	Colorado Dept of Agriculture Msmst Stds/Metrology Laboratory 3125 Wyandot St Denver, CO 80211	(303) 866-2845 FAX: (303) 480-9236

Services Available					
Tolerance Testing			Calibration		
Mass	Weight \leq 1000 lb	F	Mass	Weight \leq 3 kg	F
	Weight > 1000 lb	F		Weight > 3 kg	F
Volume	Small \leq 25 gal	F	Volume	Metal Standards	F
	Intermediate 25 - 500 gal	F		Small Glassware	F
	Large > 500 gal	F			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	F
				Rigid Rules	F
			Frequency	Tuning Forks	F
			Temperature	Liquid in Glass Thermometry	X

Fees
Labor...\$20 per hour.

Connecticut

Certification Period: 1988-1990

Laboratory Staff	Address	Telephone Number
Michael J. Dynia, Metrologist	Weights and Measures Division Dept of Consumer Protection State Office Bldg Room G17 Hartford, CT 06106	(203) 566-5230 Office (203) 566-4778 Lab FAX: (203) 566-7630

Services Available					
Tolerance Testing			Calibration		
Mass	Weight \leq 1000 lb	F	Mass	Weight \leq 3 kg	F
	Weight > 1000 lb	X		Weight > 3 kg	F
Volume	Small \leq 25 gal	F	Volume	Metal Standards	F
	Intermediate 25 - 500 gal	X		Small Glassware	F
	Large > 500 gal	X			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	F
				Rigid Rules	F
			Frequency	Tuning Forks	X
			Temperature	Liquid in Glass Thermometry	F

Fees
Labor...\$60 per hour. Minimum charge \$60. Certificate of Traceability: \$25 No fees charged pursuant to CT General Statutes, Section 43-50. Tolerance testing rates: 50 lb (25 kg) to 1000 lb (500 kg) \$20 each 2 lb (1 kg) to 50 lb (20 kg) \$10 each less than 2 lb (1 kg) \$5.25 each 10 to 32 lb weight kits (<26 pieces) \$75 per kit Other weight kits (<16 pieces) \$55 per kit

Remarks:

Laboratory tests clinical thermometers.

Delaware

Certification Period: 1990-1992

Laboratory Staff	Address	Telephone Number
David L. Baird, Metrologist	Weights and Measures Section 2320 S. Dupont Hwy Dover, DE 19901	(302) 736-4811 X32 FAX: (302) 697-6287

Services Available					
Tolerance Testing			Calibration		
Mass	Weight \leq 1000 lb	N	Mass	Weight \leq 3 kg	N
	Weight > 1000 lb	N		Weight > 3 kg	N
Volume	Small \leq 25 gal	N	Volume	Metal Standards	N
	Intermediate 25 - 500 gal	N		Small Glassware	N
	Large > 500 gal	N			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	N
				Rigid Rules	N
			Frequency	Tuning Forks	X
			Temperature	Liquid in Glass Thermometry	X

Fees
No fees are charged

Remarks:

Delaware moved into a new laboratory January, 1990.

District of Columbia

Certification Period: 1990-1992

Laboratory Staff	Address	Telephone Number
William A. Matthews, Chief/Metrologist Jeffrey X. Mason, Inspector	Weights and Measures Business Regulation Administration 614 "H" St NW Washington, DC 20001 1110 "U" St SE, Wash, DC 20020	(202) 767-7923

Services Available					
Tolerance Testing			Calibration		
Mass	Weight \leq 1000 lb	F	Mass	Weight \leq 3 kg	F
	Weight > 1000 lb	F		Weight > 3 kg	F
Volume	Small \leq 25 gal	F	Volume	Metal Standards	X
	Intermediate 25 - 500 gal	X		Small Glassware	X
	Large > 500 gal	X			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	X
				Rigid Rules	X
			Frequency	Tuning Forks	X
			Temperature	Liquid in Glass Thermometry	X

Fees
Labor...\$15 per hour.

Florida

Certification Period: 1989-1991

Laboratory Staff	Address	Telephone Number
Edward T. Koeppen, Senior Metrologist Michael D. Cook, Metrologist Barry E. Smith, Metrologist Charles E. Barnes, Lab Technician Carlos D'Arcy, Metrologist, Fort Lauderdale	Department of Agriculture and Consumer Services 3125 Conner Blvd, Bldg 2 Tallahassee, FL 32399-1650	(904) 488-9295

Services Available					
Tolerance Testing			Calibration		
Mass	Weight \leq 1000 lb	N	Mass	Weight \leq 3 kg	N
	Weight > 1000 lb	N		Weight > 3 kg	N
Volume	Small \leq 25 gal	N	Volume	Metal Standards	N
	Intermediate 25 - 500 gal	N		Small Glassware	N
	Large > 500 gal	N			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	N
				Rigid Rules	N
			Frequency	Tuning Forks	X
			Temperature	Liquid in Glass Thermometry	X

Fees
No fees are charged (as of 1990).

Georgia

Certification Period: 1990-1992

Laboratory Staff	Address	Telephone Number
Martin T. Coile, State Metrologist Brenda J. Whitener, Asst State Metrologist Festus Edoimioya, Metrologist II Valentino Bradford, Metrologist I Marty Reid, Metrologist I	Atlanta Farmers Market 16 Forest Pkwy Forest Park, GA 30050	(404) 363-7685 X88

Services Available					
Tolerance Testing			Calibration		
Mass	Weight \leq 1000 lb	N	Mass	Weight \leq 3 kg	N
	Weight > 1000 lb	N		Weight > 3 kg	N
Volume	Small \leq 25 gal	N	Volume	Metal Standards	N
	Intermediate 25 - 500 gal	N		Small Glassware	N
	Large > 500 gal	X			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	N
				Rigid Rules	N
			Frequency	Tuning Forks	X
			Temperature	Liquid in Glass Thermometry	X

Fees
No fees are charged.

Hawaii

Certification Period: 1990-1992

Laboratory Staff	Address	Telephone Number
James Maka, Chief/Metrologist Lester Yazawa, Metrologist	HI Dept of Agriculture Msmt Standards Division 725 Ilalo St Honolulu, HI 96813-5524	(808) 548-7168

Services Available

Tolerance Testing			Calibration		
Mass	Weight \leq 1000 lb	F	Mass	Weight \leq 3 kg	F
	Weight > 1000 lb	F		Weight > 3 kg	F
Volume	Small \leq 25 gal	F	Volume	Metal Standards	F
	Intermediate 25 - 500 gal	F		Small Glassware	F
	Large > 500 gal	F			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	F
				Rigid Rules	F
			Frequency	Tuning Forks	X
			Temperature	Liquid in Glass Thermometry	X

Fees

Fees are established by rule and vary according to type of artifact and type of service requested. Service repair agencies registered with the state are exempt from fees.

Idaho

Certification Period: 1990-1992

Laboratory Staff	Address	Telephone Number
Tom W. Schafer, Metrologist	Dept of Agriculture Bureau of Weights and Measures 2216 Kellogg Lane Boise, ID 83702	(208) 334-2345 FAX: (208) 334-2170

Services Available					
Tolerance Testing			Calibration		
Mass	Weight ≤ 1000 lb	N	Mass	Weight ≤ 3 kg	N
	Weight > 1000 lb	N		Weight > 3 kg	N
Volume	Small ≤ 25 gal	N	Volume	Metal Standards	N
	Intermediate 25 - 500 gal	N		Small Glassware	N
	Large > 500 gal	N			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	N
				Rigid Rules	N
			Frequency	Tuning Forks	X
			Temperature	Liquid in Glass Thermometry	X

Fees
No fees are charged.

Illinois

Certification Period: 1990-1992

Laboratory Staff	Address	Telephone Number
Stephen E. McGuire, Metrologist Chief Mike Rockford, Metrologist Associate J. R. Onken, Laboratory Technician I	IL Dept of Agriculture Standards Laboratories State Fairgrounds Box 19281 Springfield, IL 62794-9281	(217) 785-8480 or 8530 FAX: (217) 524-4882

Services Available					
Tolerance Testing			Calibration		
Mass	Weight \leq 1000 lb	F	Mass	Weight \leq 3 kg	F
	Weight > 1000 lb	F		Weight > 3 kg	F
Volume	Small \leq 25 gal	F	Volume	Metal Standards	F
	Intermediate 25 - 500 gal	F		Small Glassware	F
	Large > 500 gal	F			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	F
				Rigid Rules	F
			Frequency	Tuning Forks	X
			Temperature	Liquid in Glass Thermometry	X

Fees
Labor...\$25 per hour, tolerance testing. \$40 per hour for calibrations in mass, length, and volume.

Remarks:

The Illinois laboratory has a documented Quality Assurance Program to assure compliance with Mil-Std-45662A audits.

Indiana

Certification Period: 1989-1991

Laboratory Staff	Address	Telephone Number
Peter W. Boykin, Metrologist	Division of Weights and Measures 1330 W Michigan St Indianapolis, IN 46206	(317) 633-0350 FAX: (317) 633-0776

Services Available					
Tolerance Testing			Calibration		
Mass	Weight \leq 1000 lb	N	Mass	Weight \leq 3 kg	N
	Weight > 1000 lb	N		Weight > 3 kg	N
Volume	Small \leq 25 gal	N	Volume	Metal Standards	N
	Intermediate 25 - 500 gal	N		Small Glassware	N
	Large > 500 gal	X			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	N
				Rigid Rules	N
			Frequency	Tuning Forks	X
			Temperature	Liquid in Glass Thermometry	X

Fees
No fees are charged.

Iowa

Certification Period: 1990-1992

Laboratory Staff	Address	Telephone Number
Robert E. Hollis, Metrologist	IA Dept of Agriculture Weights and Measures Division Henry Wallace Bldg Des Moines, IA	(515) 281-5861 FAX: (515) 281-6236

Services Available					
Tolerance Testing			Calibration		
Mass	Weight \leq 1000 lb	F	Mass	Weight \leq 3 kg	F
	Weight $>$ 1000 lb	F		Weight $>$ 3 kg	F
Volume	Small \leq 25 gal	F	Volume	Metal Standards	F
	Intermediate 25 - 500 gal	F		Small Glassware	F
	Large $>$ 500 gal	F			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	F
				Rigid Rules	F
			Frequency	Tuning Forks	X
			Temperature	Liquid in Glass Thermometry	X

Fees
<p>Mass calibration, refined fuel and LPG prover calibration \$10 per hour; one hour minimum charge.</p> <p>Tolerance testing mass: \leq 5 lb: \$2; 5 lb $<$ W \leq 50 lb: \$5; 50 lb $<$ W \leq 100 lb: \$8; 100 lb $<$ W \leq 500 lb: \$10; 500 lb $<$ W \leq 1000: \$15 1000 lb $<$ W \leq 2500 lb: \$25; Weight kits with 10 or more weights: \$30 per kit.</p> <p>Volume measures: Laboratory glassware: \$10; Metal, 1 gal - 5 gal: \$10; Metal, 5 gal - 10 gal: \$15; Metal, 10 gal - 20 gal: \$20.</p> <p>Linear measures: Rigid rulers: \$20; Steel and Fabric measuring tapes: \$.10/ft for first 10 feet, \$.50/ft for each 10 ft interval thereafter.</p>

Kansas

Certification Period: 1988-1990

Laboratory Staff	Address	Telephone Number
Carl W. Gile, Metrologist	Kansas State Board Weights and Measures Lab 2016 SW 37th St Topeka, KS 66611-2570	(913) 267-0278

Services Available					
Tolerance Testing			Calibration		
Mass	Weight ≤ 1000 lb	F	Mass	Weight ≤ 3 kg	F
	Weight > 1000 lb	F		Weight > 3 kg	F
Volume	Small ≤ 25 gal	F	Volume	Metal Standards	F
	Intermediate 25 - 500 gal	F		Small Glassware	F
	Large > 500 gal	X			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	F
				Rigid Rules	F
			Frequency	Tuning Forks	F
			Temperature	Liquid in Glass Thermometry	X

Fees
Labor...\$25 per hour. (7/1/90 increase)

NTEP:

Kansas is authorized to perform field performance tests on vehicle scales.

Kentucky

Certification Period: 1990

Laboratory Staff	Address	Telephone Number
Michael L. Worthington, Metrologist Randall Wise	Division of Weights and Measures 106 W 2nd St Frankfort, KY 40601	(502) 564-4870

Services Available					
Tolerance Testing			Calibration		
Mass	Weight \leq 1000 lb	N	Mass	Weight \leq 3 kg	X
	Weight > 1000 lb	X		Weight > 3 kg	X
Volume	Small \leq 25 gal	N	Volume	Metal Standards	X
	Intermediate 25 - 500 gal	N		Small Glassware	X
	Large > 500 gal	N			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	X
				Rigid Rules	X
			Frequency	Tuning Forks	X
			Temperature	Liquid in Glass Thermometry	X

Fees
No fees are charged.

Louisiana

Certification Period: 1990

Laboratory Staff	Address	Telephone Number
Pat Chaney, Metrologist	LA Dept of Agriculture and Forestry Division of Weights and Measures PO Box 3098 Baton Rouge, LA 70821-3098	(504) 925-3780 Office (504) 922-1380 Lab

Services Available					
Tolerance Testing			Calibration		
Mass	Weight \leq 1000 lb	F	Mass	Weight \leq 3 kg	F
	Weight > 1000 lb	F		Weight > 3 kg	X
Volume	Small \leq 25 gal	F	Volume	Metal Standards	X
	Intermediate 25 - 500 gal	X		Small Glassware	X
	Large > 500 gal	X			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	X
				Rigid Rules	X
			Frequency	Tuning Forks	X
			Temperature	Liquid in Glass Thermometry	X

Fees
Labor...\$25 per hour. Minimum one hour charge. Mass tolerance testing fees: Weight kits < 32 lb \$50; W \leq 2 lb: \$4; 50 lb; 100 lb \leq W < 500 lb: \$10; 500 lb \leq W < 1000 lb: \$20; 1000 lb \leq W < 2000 lb: \$25; 2000 lb \leq W < 2500 lb: \$50; 2500 lb \leq W < 3000 lb: \$60; 3000 lb \leq W < 3250 lb: \$75; 3250 lb \leq W \leq 5000 lb: \$85.

Remarks:

Louisiana moved into a new laboratory in 1989.

Maine

Certification Period: 1988-1990

Laboratory Staff	Address	Telephone Number
Stanley K. Millay, Metrology Supervisor Danny Newcombe, Metrologist	ME Dept of Agriculture Division of Regulations Station 28 Augusta, ME 04333	(207) 289-3841 FAX: (207) 289-7161

Services Available					
Tolerance Testing			Calibration		
Mass	Weight \leq 1000 lb	F	Mass	Weight \leq 3 kg	F
	Weight > 1000 lb	X		Weight > 3 kg	X
Volume	Small \leq 25 gal	F	Volume	Metal Standards	X
	Intermediate 25 - 500 gal	F		Small Glassware	X
	Large > 500 gal	F			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	F
				Rigid Rules	F
			Frequency	Tuning Forks	F
			Temperature	Liquid in Glass Thermometry	X

Fees
Labor...\$20 per hour.

Remarks:

Maine has an indoor, drive-through, truck compartment volume calibration facility.

Maryland

Certification Period: 1990-1992

Laboratory Staff	Address	Telephone Number
Charles R. Stockman, Lab Program Manager	MD Dept of Agriculture	(301) 841-5790
Steve Barry, Metrology Technician	50 Harry S Truman Pkwy	
Alphonso Bentley, Metrology Technician	Annapolis, MD 21401	
Harry K. Johnson, Metrology Technician		
Gloria D. Lee, Metrology Technician		

Services Available					
Tolerance Testing			Calibration		
Mass	Weight \leq 1000 lb	F	Mass	Weight \leq 3 kg	F
	Weight > 1000 lb	F		Weight > 3 kg	F
Volume	Small \leq 25 gal	F	Volume	Metal Standards	F
	Intermediate 25 - 500 gal	F		Small Glassware	F
	Large > 500 gal	F			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	F
				Rigid Rules	F
			Frequency	Tuning Forks	X
			Temperature	Liquid in Glass Thermometry	F

Fees
Labor...\$16.50 per hour.

Remarks:

Maryland will be moving into a new laboratory in 1990. Laboratory tests stopwatches and also dial gauges which are used to test polyethylene sheeting.

Massachusetts

Certification Period: 1990-1992

Laboratory Staff	Address	Telephone Number
Donald W. Smith, Metrologist	MA Division of Standards One Ashburton Place Boston, MA 02108	(617) 727-5698

Services Available					
Tolerance Testing			Calibration		
Mass	Weight \leq 1000 lb	F	Mass	Weight \leq 3 kg	F
	Weight > 1000 lb	X		Weight > 3 kg	F
Volume	Small \leq 25 gal	F	Volume	Metal Standards	F
	Intermediate 25 - 500 gal	F		Small Glassware	F
	Large > 500 gal	X			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	F
				Rigid Rules	F
			Frequency	Tuning Forks	X
			Temperature	Liquid in Glass Thermometry	X

Fees
Labor...\$35 per hour. Tolerance testing, Class F, \$4 each weight, \$2 adjustment fee.

Michigan

Certification Period: 1990-1992

Laboratory Staff	Address	Telephone Number
Harold Birgy, Metrologist/Weights and Measures Specialist Ronald Balaze, Metrologist	MI Dept of Agriculture Food Division Ottawa Bldg, 4th Fl PO Box 30017 Lansing, MI 48909	(517) 373-1060 FAX: (517) 335-0628

Services Available					
Tolerance Testing			Calibration		
Mass	Weight \leq 1000 lb	F	Mass	Weight \leq 3 kg	F
	Weight > 1000 lb	F		Weight > 3 kg	F
Volume	Small \leq 25 gal	F	Volume	Metal Standards	F
	Intermediate 25 - 500 gal	F		Small Glassware	F
	Large > 500 gal	F			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	F
				Rigid Rules	F
			Frequency	Tuning Forks	X
			Temperature	Liquid in Glass Thermometry	X

Fees
Labor...\$36.50 per hour. (\$50.75, overtime)

Minnesota

Certification Period: 1989-1991

Laboratory Staff	Address	Telephone Number
David Dikken, Metrologist Bruce A. Adams, Metrologist	Dept of Public Service Division of Weights and Measures 2277 Hwy 36 Roseville, MN 55113	(612) 341-7200

Services Available					
Tolerance Testing			Calibration		
Mass	Weight \leq 1000 lb	F	Mass	Weight \leq 3 kg	F
	Weight > 1000 lb	F		Weight > 3 kg	F
Volume	Small \leq 25 gal	F	Volume	Metal Standards	F
	Intermediate 25 - 500 gal	F		Small Glassware	F
	Large > 500 gal	F			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	F
				Rigid Rules	F
			Frequency	Tuning Forks	X
			Temperature	Liquid in Glass Thermometry	F

Fees
Labor...\$75 per hour.

Remarks:

Minnesota metrologists have received NIST Mass MAP training.

Mississippi

Certification Period: 1989-1991

Laboratory Staff	Address	Telephone Number
Ervin D. Torrence, Metrologist Jerry Burton, Inspector	PO Box 1043 Alcorn State University Lorman, MS 39096	(601) 877- 3802

Services Available					
Tolerance Testing			Calibration		
Mass	Weight \leq 1000 lb	N	Mass	Weight \leq 3 kg	N
	Weight > 1000 lb	X		Weight > 3 kg	N
Volume	Small \leq 25 gal	N	Volume	Metal Standards	X
	Intermediate 25 - 500 gal	X		Small Glassware	X
	Large > 500 gal	X			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	N
				Rigid Rules	N
			Frequency	Tuning Forks	X
			Temperature	Liquid in Glass Thermometry	X

Fees
No fees are charged.

Missouri

Certification Period: 1989-1991

Laboratory Staff	Address	Telephone Number
Robert Wittenberger, Laboratory Program Supervisor, Metrologist	Mailing: MO Dept of Agriculture PO Box 630 Jefferson City, MO 65102 Shipping: 1616 Missouri Blvd Jefferson City, MO 65109	(314) 751-3440

Services Available					
Tolerance Testing			Calibration		
Mass	Weight \leq 1000 lb	F	Mass	Weight \leq 3 kg	F
	Weight > 1000 lb	F		Weight > 3 kg	F
Volume	Small \leq 25 gal	F	Volume	Metal Standards	F
	Intermediate 25 - 500 gal	F		Small Glassware	F
	Large > 500 gal	F			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	F
				Rigid Rules	F
			Frequency	Tuning Forks	F
			Temperature	Liquid in Glass Thermometry	X

Fees
Labor...\$25 per hour, tolerance testing; \$35 per hour, calibration. One hour minimum charge, time over one hour rounded to the nearest hour.

Remarks:

Missouri moved into a new laboratory in 1986.

Montana

Certification Period: 1990

Laboratory Staff	Address	Telephone Number
Dan Nesbit, Metrologist	Bureau of Weights and Measures 1424 E 9th Ave Helena, MT 59620-0423	(406) 444-3164

Services Available					
Tolerance Testing			Calibration		
Mass	Weight \leq 1000 lb	F	Mass	Weight \leq 3 kg	X
	Weight > 1000 lb	F		Weight > 3 kg	X
Volume	Small \leq 25 gal	F	Volume	Metal Standards	X
	Intermediate 25 - 500 gal	F		Small Glassware	X
	Large > 500 gal	X			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	X
				Rigid Rules	X
			Frequency	Tuning Forks	X
			Temperature	Liquid in Glass Thermometry	X

Fees
Labor...\$20 per hour.

Nebraska

Certification Period: 1990-1992

Laboratory Staff	Address	Telephone Number
Gary Kliment, Metrologist	Division of Weights and Measures PO Box 94757 Lincoln, NE 68509 NE Standards Lab, 3705 S 14th St Lincoln, NE 68502	(402) 471-4292 Office (402) 479-4171 Lab

Services Available					
Tolerance Testing			Calibration		
Mass	Weight \leq 1000 lb	F	Mass	Weight \leq 3 kg	F
	Weight > 1000 lb	F		Weight > 3 kg	F
Volume	Small \leq 25 gal	F	Volume	Metal Standards	F
	Intermediate 25 - 500 gal	F		Small Glassware	F
	Large > 500 gal	F			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	F
				Rigid Rules	F
			Frequency	Tuning Forks	X
			Temperature	Liquid in Glass Thermometry	X

Fees		
Labor...\$23 per hour. Plus materials, and time spent cleaning.		
Mass:	Class F:	Other Sets:
Number of weights		
1 - 14	\$24	\$30
15 - 25	32	50
26 - 38	48	70
> 38	\$1 each additional weight	
< 1/4 oz \$23/hour; 1/4 oz < W ≤ 5 lb: \$5; 5 ≤ 50 lb: \$8; 50 ≤ 1000: \$12.		
Length and Volume:		
flasks: < gill: \$6.50; gill - pint: \$9; quart: \$10.50;		
1/2 gal: \$13.50; gallon: \$16.00; ≤ 5 gallon: \$12; 5-25		
gallon: \$25; 25-100 gallon: \$35.		
tapes: 3 ft - 100 ft: \$1 per interval.		

Nevada

Certification Period: 1990-1992

Laboratory Staff	Address	Telephone Number
Walter F. Headrick, Metrologist Steve Grabski, Metrologist	NV Dept of Agriculture PO Box 11100 Reno, NV 89510-1100 Shipping: 2150 Frazer Ave Sparks, NV 89431	(702) 789-0166 FAX: (702) 789-0120

Services Available					
Tolerance Testing			Calibration		
Mass	Weight \leq 1000 lb	F	Mass	Weight \leq 3 kg	F
	Weight > 1000 lb	F		Weight > 3 kg	F
Volume	Small \leq 25 gal	F	Volume	Metal Standards	F
	Intermediate 25 - 500 gal	F		Small Glassware	O
	Large > 500 gal	F			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	F
				Rigid Rules	O
			Frequency	Tuning Forks	X
			Temperature	Liquid in Glass Thermometry	X

Fees
Labor...\$20 per hour, plus parts and shipping costs.

New Hampshire

Certification Period: Not Currently Certified

Laboratory Staff	Address	Telephone Number
Michael F. Grenier, Metrologist	NH Department of Agriculture Caller Box 2042 10 Ferry St Concord, NH 03301-2042	(603) 271-3709 FAX: (603) 271-1109

Services Available					
Tolerance Testing			Calibration		
Mass	Weight ≤ 1000 lb	X	Mass	Weight ≤ 3 kg	X
	Weight > 1000 lb	X		Weight > 3 kg	X
Volume	Small ≤ 25 gal	X	Volume	Metal Standards	X
	Intermediate 25 - 500 gal	X		Small Glassware	X
	Large > 500 gal	X			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	X
				Rigid Rules	X
			Frequency	Tuning Forks	X
			Temperature	Liquid in Glass Thermometry	X

Fees
Labor...\$25 per hour. glass flasks: \$10; 5 gallon test measures: \$10 30 lb weight kit: \$35; 5, 10, 25, 50 lb weights: \$10 each > 50 lb: \$25 each; 500/1000 lb: \$25 each

New Jersey

Certification Period: 1988-1990

Laboratory Staff	Address	Telephone Number
William J. Bonan, Wts and Meas Inspector Pasquale D'Errico, Inspector II	Office of Weights and Measures 1261 US Rte 1 and 9 South Avenel, NJ 07001	(201) 815-4840

Services Available					
Tolerance Testing			Calibration		
Mass	Weight ≤ 1000 lb	N	Mass	Weight ≤ 3 kg	N
	Weight > 1000 lb	X		Weight > 3 kg	N
Volume	Small ≤ 25 gal	N	Volume	Metal Standards	N
	Intermediate 25 - 500 gal	N		Small Glassware	N
	Large > 500 gal	N			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	N
				Rigid Rules	N
			Frequency	Tuning Forks	N
			Temperature	Liquid in Glass Thermometry	X

Fees
No fees are charged.

Remarks:

New Jersey moved into a new laboratory in 1988. Laboratory tests stopwatches, and also provides linear measurements using a special comparator table.

New Mexico

Certification Period: 1988-1990

Laboratory Staff	Address	Telephone Number
Richard F. Schulmeister, Metrologist	NM Dept of Agriculture Standards and Consumer Services PO Box 30005 Dept 3170 Las Cruces, NM 88003-0005	(505) 646-1616 FAX: (505) 646-3303

Services Available					
Tolerance Testing			Calibration		
Mass	Weight ≤ 1000 lb	F	Mass	Weight ≤ 3 kg	F
	Weight > 1000 lb	F		Weight > 3 kg	F
Volume	Small ≤ 25 gal	F	Volume	Metal Standards	F
	Intermediate 25 - 500 gal	F		Small Glassware	F
	Large > 500 gal	F			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	F
				Rigid Rules	F
			Frequency	Tuning Forks	F
			Temperature	Liquid in Glass Thermometry	X

Fees
Labor...\$26 per hour. Minimum 1/2 hour charge.

New York

Certification Period: 1990-1992

Laboratory Staff	Address	Telephone Number
Ross J. Andersen, Metrologist	Bureau of Weights and Measures	(518) 457-4781
William Fishman, Metrologist	Bldg 7A State Campus	(518) 485-8377
	Albany, NY 12235	FAX: (518) 457-4780

Services Available					
Tolerance Testing			Calibration		
Mass	Weight \leq 1000 lb	F	Mass	Weight \leq 3 kg	F
	Weight > 1000 lb	F		Weight > 3 kg	F
Volume	Small \leq 25 gal	F	Volume	Metal Standards	F
	Intermediate 25 - 500 gal	F		Small Glassware	F
	Large > 500 gal	F			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	F
				Rigid Rules	F
			Frequency	Tuning Forks	X
			Temperature	Liquid in Glass Thermometry	F

Fees
Labor...Special Tests: \$50 per hour. Fees vary according to type of artifact and type of service requested. Contact laboratory directly for specific fee information.

NTEP:

New York is an authorized NTEP laboratory for the evaluation of scales and other weighing systems. NTEP fees are \$50 per hour for laboratory time and \$35 per hour for field test time. Contact laboratory for NTEP test information.

North Carolina

Certification Period: 1989-1991

Laboratory Staff	Address	Telephone Number
L. F. Eason, Standards Laboratory Manager Sherry Teachey, Metrologist II John Vettel, Metrologist I Susan Hefflen, Metrologist I Cheryl Tew, Grain Moisture Prgm Supervisor	NC Dept of Agriculture/Std's Lab PO Box 27647 Dept SD Raleigh, NC 27611 Shipping: 4040 District Drive, Raleigh, NC 27607	(919) 733-4411 FAX: (919) 733-0999

Services Available					
Tolerance Testing			Calibration		
Mass	Weight \leq 1000 lb	N	Mass	Weight \leq 3 kg	N
	Weight > 1000 lb	N		Weight > 3 kg	N
Volume	Small \leq 25 gal	N	Volume	Metal Standards	N
	Intermediate 25 - 500 gal	N		Small Glassware	N
	Large > 500 gal	N			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	N
				Rigid Rules	N
			Frequency	Tuning Forks	X
			Temperature	Liquid in Glass Thermometry	N

Fees
No fees are charged.

Remarks:

North Carolina moved into a new laboratory in 1985 and has an additional large volume calibration facility.

NTEP:

North Carolina is authorized for NTEP field performance evaluations on liquid measuring devices. Fees are charged for type evaluations. Contact Ronald Murdock for NTEP tests: (919) 733-3313.

North Dakota

Certification Period: 1990-1992

Laboratory Staff	Address	Telephone Number
Curtis Roberts, Director/Metrologist	Public Service Commission Weights and Measures Division State Capitol Bismarck, ND 58505	(701) 224-2400 FAX: (701) 224-2410

Services Available					
Tolerance Testing			Calibration		
Mass	Weight \leq 1000 lb	F	Mass	Weight \leq 3 kg	X
	Weight > 1000 lb	F		Weight > 3 kg	X
Volume	Small \leq 25 gal	F	Volume	Metal Standards	X
	Intermediate 25 - 500 gal	F		Small Glassware	X
	Large > 500 gal	F			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	X
				Rigid Rules	X
			Frequency	Tuning Forks	X
			Temperature	Liquid in Glass Thermometry	X

Fees
Labor...\$7.50 per quarter hour, per person. (\$30 per hour.)

Remarks:

North Dakota is involved with accuracy testing of allocation crude oil and gas meters. Laboratory is not operated on a full-time basis.

Ohio

Certification Period: 1989-1991

Laboratory Staff	Address	Telephone Number
Larry Rine, Metrologist	Dept of Agriculture 8995 E Main St Reynoldsburg, OH 43068	(614) 866-6361 FAX: (614) 866-4174

Services Available					
Tolerance Testing			Calibration		
Mass	Weight \leq 1000 lb	F	Mass	Weight \leq 3 kg	F
	Weight > 1000 lb	F		Weight > 3 kg	F
Volume	Small \leq 25 gal	F	Volume	Metal Standards	F
	Intermediate 25 - 500 gal	F		Small Glassware	X
	Large > 500 gal	X			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	F
				Rigid Rules	F
			Frequency	Tuning Forks	X
			Temperature	Liquid in Glass Thermometry	X

Fees
<p>Fees are established pursuant to Section 901.43 of the Ohio Revised Code and vary according to type of artifact and type of service requested. Contact the laboratory directly for fee information.</p>

NTEP:

Ohio is an authorized NTEP laboratory for the type evaluation of scales and other weighing systems. NTEP fees are \$60 per hour for technician time; \$250 for use of environmental chamber; plus cost recovery for such items as travel, equipment rental, and any other associated costs. Contact James Truex for NTEP information: (614) 866-6361.

Oklahoma

Certification Period: 1990-1992

Laboratory Staff	Address	Telephone Number
Ken L. Fraley, Metrologist Richard Gonzales, Sr Laboratory Technician	Bureau of Standards Laboratory Division 2800 N Lincoln Blvd Oklahoma City, OK 73105	(405) 521-3864 X370 FAX: (405) 521-4912

Services Available					
Tolerance Testing			Calibration		
Mass	Weight \leq 1000 lb	F	Mass	Weight \leq 3 kg	F
	Weight > 1000 lb	F		Weight > 3 kg	F
Volume	Small \leq 25 gal	F	Volume	Metal Standards	F
	Intermediate 25 - 500 gal	F		Small Glassware	F
	Large > 500 gal	X			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	F
				Rigid Rules	F
			Frequency	Tuning Forks	X
			Temperature	Liquid in Glass Thermometry	F

Fees
Labor...\$25 per hour for special tests not listed in the fee schedule. Fees vary according to type of artifact and type of service requested. Contact laboratory directly for specific fee information.

Remarks:

Oklahoma moved into a new laboratory in 1986. The laboratory has sophisticated computer software for control charts and data analysis.

Oregon

Certification Period: 1988-1990

Laboratory Staff	Address	Telephone Number
James F. Clifford, Metrologist	OR Dept of Agriculture Msmt Standards Divisor 635 Capitol St NE Salem, OR 97310-0110	(503) 378-3792 FAX: (503) 378-5529

Services Available					
Tolerance Testing			Calibration		
Mass	Weight \leq 1000 lb	F	Mass	Weight \leq 3 kg	F
	Weight > 1000 lb	F		Weight > 3 kg	F
Volume	Small \leq 25 gal	F	Volume	Metal Standards	X
	Intermediate 25 - 500 gal	F		Small Glassware	X
	Large > 500 gal	F			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	F
				Rigid Rules	F
			Frequency	Tuning Forks	X
			Temperature	Liquid in Glass Thermometry	X

Fees
Labor...\$25 per hour.

Pennsylvania

Certification Period: 1990-1992

Laboratory Staff	Address	Telephone Number
G. Edward Carpenter, Metrologist John E. Fisher, Lab Division Chief Peter Millvan, Metrologist	Dept of General Services 2221 Forster St Room G-28 Harrisburg, PA 17125	(717) 787-6426

Services Available					
Tolerance Testing			Calibration		
Mass	Weight \leq 1000 lb	N	Mass	Weight \leq 3 kg	N
	Weight > 1000 lb	N		Weight > 3 kg	N
Volume	Small \leq 25 gal	N	Volume	Metal Standards	X
	Intermediate 25 - 500 gal	N		Small Glassware	X
	Large > 500 gal	X			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	N
				Rigid Rules	N
			Frequency	Tuning Forks	X
			Temperature	Liquid in Glass Thermometry	X

Fees
No fees are charged.

Puerto Rico

Certification Period: 1989-1991

Laboratory Staff	Address	Telephone Number
Edmundo Rosario-Fred, Technician Jose A. Torres-Ferrer, Technician, Field Supr Axel Agosto-Cepeda, Technician	Commonwealth of Puerto Rico Dept of Consumer Affairs PO Box 41059 Minillás Station Santurce, Puerto Rico 00940	(809) 724-5153

Services Available					
Tolerance Testing			Calibration		
Mass	Weight \leq 1000 lb	F	Mass	Weight \leq 3 kg	F
	Weight > 1000 lb	F		Weight > 3 kg	F
Volume	Small \leq 25 gal	F	Volume	Metal Standards	F
	Intermediate 25 - 500 gal	F		Small Glassware	F
	Large > 500 gal	F			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	F
				Rigid Rules	F
			Frequency	Tuning Forks	X
			Temperature	Liquid in Glass Thermometry	X

Fees
<p>Fees are established in accordance with the Law of Weights and Measures of the Commonwealth of Puerto Rico jointly with the Organic Law of the Department of Consumer Affairs. Fees vary according to type of artifact and type of service requested.</p>

Remarks:

Laboratory also tests density hydrometers used to test sugars.

Rhode Island

Certification Period: 1990

Laboratory Staff	Address	Telephone Number
Lynda Agresti Maurer, Supr Metrologist Frederic J. Violo, Metrologist	Dept of Labor 220 Elmwood Ave Providence, RI 02907	(401) 457-1867

Services Available					
Tolerance Testing			Calibration		
Mass	Weight \leq 1000 lb	N	Mass	Weight \leq 3 kg	X
	Weight > 1000 lb	X		Weight > 3 kg	X
Volume	Small \leq 25 gal	N	Volume	Metal Standards	X
	Intermediate 25 - 500 gal	X		Small Glassware	X
	Large > 500 gal	X			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	X
				Rigid Rules	X
			Frequency	Tuning Forks	X
			Temperature	Liquid in Glass Thermometry	X

Fees
No fees are charged.

Remarks:

Laboratory is not operated on a full-time basis.

South Carolina

Certification Period: 1990-1992

Laboratory Staff	Address	Telephone Number
John V. Pugh, Metrology Laboratory Dir Billy Kennington, Metrologist	Dept of Agriculture/Cons Protection PO Box 11280 Columbia, SC 29211 Shipping: 237 Catawba St Columbia, SC 29201	(803) 737-2080 (803) 253-4052 FAX: (803) 734-2192

Services Available					
Tolerance Testing			Calibration		
Mass	Weight ≤ 1000 lb	N	Mass	Weight ≤ 3 kg	N
	Weight > 1000 lb	N		Weight > 3 kg	N
Volume	Small ≤ 25 gal	N	Volume	Metal Standards	N
	Intermediate 25 - 500 gal	N		Small Glassware	N
	Large > 500 gal	N			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	N
				Rigid Rules	N
			Frequency	Tuning Forks	X
			Temperature	Liquid in Glass Thermometry	X

Fees
No fees are charged.

South Dakota

Certification Period: 1989-1991

Laboratory Staff	Address	Telephone Number
Jim Peskey, Sr. Retail Inspector Leonard G. Bies, Sr. Inspector	Dept of Commerce State Capitol Pierre, SD 57501	(605) 773-3693

Services Available					
Tolerance Testing			Calibration		
Mass	Weight \leq 1000 lb	F	Mass	Weight \leq 3 kg	X
	Weight > 1000 lb	X		Weight > 3 kg	X
Volume	Small \leq 25 gal	F	Volume	Metal Standards	X
	Intermediate 25 - 500 gal	X		Small Glassware	X
	Large > 500 gal	X			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	X
				Rigid Rules	X
			Frequency	Tuning Forks	X
			Temperature	Liquid in Glass Thermometry	X

Fees
Labor...\$20 per hour.

Remarks:

Laboratory is not operated on a full-time basis.

Tennessee

Certification Period: 1989-1991

Laboratory Staff	Address	Telephone Number
Robert G. Williams, Supervisor Garry Cohea, Metrologist	TN Dept of Agriculture PO Box 40627 Melrose Station Nashville, TN 37204	(615) 360-0159 Office (615) 360-0158 Lab

Services Available					
Tolerance Testing			Calibration		
Mass	Weight \leq 1000 lb	N	Mass	Weight \leq 3 kg	X
	Weight $>$ 1000 lb	X		Weight $>$ 3 kg	X
Volume	Small \leq 25 gal	N	Volume	Metal Standards	X
	Intermediate 25 - 500 gal	X		Small Glassware	X
	Large $>$ 500 gal	X			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	X
				Rigid Rules	X
			Frequency	Tuning Forks	X
			Temperature	Liquid in Glass Thermometry	X

Fees
No fees are charged.

Texas

Certification Period: 1990-1992

Laboratory Staff	Address	Telephone Number
James H. Eskew, Admin of Metrology Prgm Patrick Forester, Metrologist Rodger Brown, Metrologist Randy Calcote, Metrologist, Lubbock	TX Dept of Agriculture Metrology Laboratory 119 Cumberland Rd Austin, TX 78704	(512) 462-1441

Services Available					
Tolerance Testing			Calibration		
Mass	Weight ≤ 1000 lb	F	Mass	Weight ≤ 3 kg	F
	Weight > 1000 lb	F		Weight > 3 kg	F
Volume	Small ≤ 25 gal	F	Volume	Metal Standards	F
	Intermediate 25 - 500 gal	F		Small Glassware	F
	Large > 500 gal	F			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	F
				Rigid Rules	F
			Frequency	Tuning Forks	X
			Temperature	Liquid in Glass Thermometry	X

Fees
Mass, Tolerance Testing: W $<$ 1000 lb: \$2; 1000 lb: \$5; 2500 lb: \$10; 5000 lb: \$20. Mass, Calibrations: W \leq 3 kg: \$25 each; 3 kg $<$ W \leq 30 kg: \$50 each; W $>$ 30 kg: \$70 each. Volume: 1 gal measure: \$2; 5 gal: \$2; V $>$ 5 gal: \$2 plus \$0.20 per gal over 5 gallons; glassware: \$25 per increment. Length: \$25 per increment.

Remarks:

Texas has independent laboratory rooms, balances, and standards for calibration and tolerance testing of mass. Calibrations up to 2500 lb, and tolerance testing up to 5000 lb are possible.

Utah

Certification Period: 1989-1991

Laboratory Staff	Address	Telephone Number
Daniel S. Mays, Metrologist	UT Dept of Agriculture Weights and Measures Division 350 N. Redwood Rd Salt Lake City, UT 84116	(801) 538-7156 FAX: (801) 538-7126

Services Available					
Tolerance Testing			Calibration		
Mass	Weight \leq 1000 lb	F	Mass	Weight \leq 3 kg	F
	Weight > 1000 lb	F		Weight > 3 kg	F
Volume	Small \leq 25 gal	F	Volume	Metal Standards	X
	Intermediate 25 - 500 gal	F		Small Glassware	X
	Large > 500 gal	F			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	F
				Rigid Rules	F
			Frequency	Tuning Forks	X
			Temperature	Liquid in Glass Thermometry	X

Fees
Contact laboratory for fee information.

Vermont

Certification Period: 1989-1991

Laboratory Staff	Address	Telephone Number
Raymond P. Cioffi, Metrologist/Weights and Measures Specialist	Consumer Assurance Division 116 State St State Office Bldg Montpelier, VT 05602	(802) 828-2436 Office (802) 828-2429 Lab FAX: (802) 828-2361

Services Available					
Tolerance Testing			Calibration		
Mass	Weight \leq 1000 lb	F	Mass	Weight \leq 3 kg	X
	Weight > 1000 lb	X		Weight > 3 kg	X
Volume	Small \leq 25 gal	F	Volume	Metal Standards	X
	Intermediate 25 - 500 gal	F		Small Glassware	F
	Large > 500 gal	X			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	X
				Rigid Rules	X
			Frequency	Tuning Forks	X
			Temperature	Liquid in Glass Thermometry	X

Fees
Labor...\$25 per hour. Syrup hydrometers: \$1. Sap hydrometers and certificate: \$3. Refractometers: \$25 per hour.

Remarks:

Laboratory tests density hydrometers which are used in the syrup industry. Laboratory is not operated on a full-time basis.

Virginia

Certification Period: 1990-1992

Laboratory Staff	Address	Telephone Number
Marion W. Cain, Metrologist Michael J. Kramer, Inspector	VA Dept of Agriculture and Consumer Services PO Box 1163 Rm 403 Richmond, VA 23209	(804) 786-0479 FAX: (804) 371-7793

Services Available					
Tolerance Testing			Calibration		
Mass	Weight \leq 1000 lb	N	Mass	Weight \leq 3 kg	N
	Weight > 1000 lb	N		Weight > 3 kg	N
Volume	Small \leq 25 gal	N	Volume	Metal Standards	N
	Intermediate 25 - 500 gal	N		Small Glassware	N
	Large > 500 gal	N			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	N
				Rigid Rules	N
			Frequency	Tuning Forks	N
			Temperature	Liquid in Glass Thermometry	X

Fees
No fees are charged.

Remarks:

Laboratory tests Babcock dairy bottles.

Virgin Islands

Certification Period: Not Currently Certified

Laboratory Staff	Address	Telephone Number
Sandra Croft, Metrologist	Consumer Service Division Golden Rock Shopping Center Christiansted St VI 00820	(809) 774-3130

Services Available					
Tolerance Testing			Calibration		
Mass	Weight ≤ 1000 lb	X	Mass	Weight ≤ 3 kg	X
	Weight > 1000 lb	X		Weight > 3 kg	X
Volume	Small ≤ 25 gal	X	Volume	Metal Standards	X
	Intermediate 25 - 500 gal	X		Small Glassware	X
	Large > 500 gal	X			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	X
				Rigid Rules	X
			Frequency	Tuning Forks	X
			Temperature	Liquid in Glass Thermometry	X

Fees

Remarks:

Laboratory equipment and standards were destroyed by Hurricane Hugo in 1989.

Washington

Certification Period: 1988-1990

Laboratory Staff	Address	Telephone Number
James H. Cammel, Metrologist, Inspector III	Dept of Agriculture Weights and Measures 406 General Administration Olympia, WA 98504	(206) 753-5042 FAX: (206) 586-7029

Services Available					
Tolerance Testing			Calibration		
Mass	Weight \leq 1000 lb	N	Mass	Weight \leq 3 kg	N
	Weight > 1000 lb	N		Weight > 3 kg	N
Volume	Small \leq 25 gal	N	Volume	Metal Standards	X
	Intermediate 25 - 500 gal	N		Small Glassware	X
	Large > 500 gal	N			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	N
				Rigid Rules	X
			Frequency	Tuning Forks	X
			Temperature	Liquid in Glass Thermometry	X

Fees
<p>Fees will be charged starting mid-1990. Fees will vary according to type of artifact and type of service requested. The hourly rate averages approximately \$35 per hour.</p> <p>Repairs, if necessary, will be made only with owner-approval at the rate of \$25 per hour.</p>

West Virginia

Certification Period: 1990-1992

Laboratory Staff	Address	Telephone Number
Karl H. Angell, Jr, Metrologist	WV Dept of Labor Weights and Measures Division 570 McCorkel Ave St. Albans, WV 25117	(304) 727-5781

Services Available					
Tolerance Testing			Calibration		
Mass	Weight ≤ 1000 lb	N	Mass	Weight ≤ 3 kg	N
	Weight > 1000 lb	N		Weight > 3 kg	N
Volume	Small ≤ 25 gal	N	Volume	Metal Standards	N
	Intermediate 25 - 500 gal	N		Small Glassware	N
	Large > 500 gal	N			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	N
				Rigid Rules	N
			Frequency	Tuning Forks	X
			Temperature	Liquid in Glass Thermometry	X

Fees
No fees are charged.

Remarks:

The West Virginia laboratory was remodeled in 1989.

Wisconsin

Certification Period: 1990

Laboratory Staff	Address	Telephone Number
James H. Akey, Metrologist Alan Porter, Technical Supervisor	WI Dept of Agriculture Trade and Consumer Protection 4702 University Ave Madison, WI 53705 PO Box 7883, Madison, WI 53707	(608) 267-3510 Lab (608) 266-7244 Office FAX: (608) 266-1560

Services Available					
Tolerance Testing			Calibration		
Mass	Weight ≤ 1000 lb	F	Mass	Weight ≤ 3 kg	F
	Weight > 1000 lb	F		Weight > 3 kg	F
Volume	Small ≤ 25 gal	F	Volume	Metal Standards	F
	Intermediate 25 - 500 gal	F		Small Glassware	F
	Large > 500 gal	F			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	F
				Rigid Rules	F
			Frequency	Tuning Forks	X
			Temperature	Liquid in Glass Thermometry	X

Fees
<p>Labor...\$40.25 per hour. Minimum charge is 1/2 hour.</p> <p>Verification of weights and measures used in enforcement work by State, county, and municipal governments is exempt from fees.</p> <p>Mass, tolerance testing: 500 lb, 1,000 lb: \$10.10 each; all other weights (e.g. 50 lb, 25 lb, 5 lb, 1 lb and smaller: \$6.10 each. Test kits, 30 lb (<25 pcs): \$40.25.</p> <p>Volume: glass flasks: \$20.15; field test measures, 1 and 5 gal: \$12.10; provers, 50 and 100 gal: \$40.25. > 100 gal at hourly rate.</p>

Wyoming

Certification Period: 1990-1992

Laboratory Staff	Address	Telephone Number
Victor Gerber, Metrologist	WY Dept of Agriculture 2219 Carey Ave Cheyenne, WY 82002	(307) 777-7324 FAX: (307) 777-6593

Services Available					
Tolerance Testing			Calibration		
Mass	Weight \leq 1000 lb	F	Mass	Weight \leq 3 kg	X
	Weight > 1000 lb	F		Weight > 3 kg	X
Volume	Small \leq 25 gal	F	Volume	Metal Standards	X
	Intermediate 25 - 500 gal	F		Small Glassware	X
	Large > 500 gal	F			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	X
				Rigid Rules	X
			Frequency	Tuning Forks	X
			Temperature	Liquid in Glass Thermometry	X

Fees
Labor...\$10 per hour.

Remarks:

Wyoming moved into a new laboratory facility in 1988.

USDA/FGIS

Certification Period: 1989-1991

Laboratory Staff	Address	Telephone Number
Paul Hadyka, Industrial Specialist	USDA/FGIS	(202) 382-0262 (DC)
Willis Norrs, Industrial Specialist	Room 1640-S PO Box 96454	(708) 458-0655 (IL)
	1400 Ind. Ave SW	
	Washington, DC 20090-6454	

Services Available					
Tolerance Testing			Calibration		
Mass	Weight \leq 1000 lb	O	Mass	Weight \leq 3 kg	X
	Weight > 1000 lb	F		Weight > 3 kg	F
Volume	Small \leq 25 gal	X	Volume	Metal Standards	X
	Intermediate 25 - 500 gal	X		Small Glassware	X
	Large > 500 gal	X			
O: Service to parent organization only; F: Service available on a fee basis; N: Service available, no fee; X: Services are not available, certification was not requested, or certification was not granted.			Length	Steel Tapes	X
				Rigid Rules	X
			Frequency	Tuning Forks	X
			Temperature	Liquid in Glass Thermometry	X

Fees
Labor...\$38.80 per hour.

Remarks:

Calibration and tolerance testing of mass standards from 1,000 lb to 10,000 lb is provided by Willis Norrs: USDA, FGIS, Master Scale Depot, 5800 W. 69th St, Chicago, IL 60638.

NTEP:

The USDA/FGIS is authorized to perform NTEP tests on automatic bulk weighing systems, railway track scales, and grain moisture scales.

NIST-114A
(REV. 3-89)

U.S. DEPARTMENT OF COMMERCE
NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

BIBLIOGRAPHIC DATA SHEET

1. PUBLICATION OR REPORT NUMBER

NIST/SP-791

2. PERFORMING ORGANIZATION REPORT NUMBER

3. PUBLICATION DATE

June 1990

4. TITLE AND SUBTITLE

State Weights and Measures Laboratories:
State Standards Program Description and Directory

5. AUTHOR(S)

Georgia L. Harris

6. PERFORMING ORGANIZATION (IF JOINT OR OTHER THAN NIST, SEE INSTRUCTIONS)

U.S. DEPARTMENT OF COMMERCE
NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY
GAITHERSBURG, MD 20899

7. CONTRACT/GRANT NUMBER

8. TYPE OF REPORT AND PERIOD COVERED

Final

9. SPONSORING ORGANIZATION NAME AND COMPLETE ADDRESS (STREET, CITY, STATE, ZIP)

Same as item 6.

10. SUPPLEMENTARY NOTES

Supersedes NBS/SP-686.

☐ DOCUMENT DESCRIBES A COMPUTER PROGRAM; SF-185, FIPS SOFTWARE SUMMARY, IS ATTACHED.

11. ABSTRACT (A 200-WORD OR LESS FACTUAL SUMMARY OF MOST SIGNIFICANT INFORMATION. IF DOCUMENT INCLUDES A SIGNIFICANT BIBLIOGRAPHY OR LITERATURE SURVEY, MENTION IT HERE.)

In support of its mission to promote uniform standards of measurement throughout the country, the National Institute of Standards and Technology (NIST) received funding in 1965 to provide new standards of mass, length, and volume to State weights and measures laboratories. This program, called the [New] State Standards Program, also provided the equipment needed to perform calibrations in these measurement areas.

Part I describes the certification program whereby NIST certifies State weights and measures laboratories. Part II is the directory of State weights and measures laboratories and lists the services they provide to State and local weights and measures agencies as well as to industry. The directory is intended to assist potential users of the laboratory services in locating and obtaining needed measurement services.

12. KEY WORDS (6 TO 12 ENTRIES; ALPHABETICAL ORDER; CAPITALIZE ONLY PROPER NAMES; AND SEPARATE KEY WORDS BY SEMICOLONS)

calibration; measurement control; National Type Evaluation Program; State directory; State services; tolerance testing; weights and measures

13. AVAILABILITY

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14. NUMBER OF PRINTED PAGES

68

15. PRICE

NIST *Technical Publications*

Periodical

Journal of Research of the National Institute of Standards and Technology—Reports NIST research and development in those disciplines of the physical and engineering sciences in which the Institute is active. These include physics, chemistry, engineering, mathematics, and computer sciences. Papers cover a broad range of subjects, with major emphasis on measurement methodology and the basic technology underlying standardization. Also included from time to time are survey articles on topics closely related to the Institute's technical and scientific programs. Issued six times a year.

Nonperiodicals

Monographs—Major contributions to the technical literature on various subjects related to the Institute's scientific and technical activities.

Handbooks—Recommended codes of engineering and industrial practice (including safety codes) developed in cooperation with interested industries, professional organizations, and regulatory bodies.

Special Publications—Include proceedings of conferences sponsored by NIST, NIST annual reports, and other special publications appropriate to this grouping such as wall charts, pocket cards, and bibliographies.

Applied Mathematics Series—Mathematical tables, manuals, and studies of special interest to physicists, engineers, chemists, biologists, mathematicians, computer programmers, and others engaged in scientific and technical work.

National Standard Reference Data Series—Provides quantitative data on the physical and chemical properties of materials, compiled from the world's literature and critically evaluated. Developed under a worldwide program coordinated by NIST under the authority of the National Standard Data Act (Public Law 90-396). NOTE: The Journal of Physical and Chemical Reference Data (JPCRD) is published quarterly for NIST by the American Chemical Society (ACS) and the American Institute of Physics (AIP). Subscriptions, reprints, and supplements are available from ACS, 1155 Sixteenth St., NW., Washington, DC 20056.

Building Science Series—Disseminates technical information developed at the Institute on building materials, components, systems, and whole structures. The series presents research results, test methods, and performance criteria related to the structural and environmental functions and the durability and safety characteristics of building elements and systems.

Technical Notes—Studies or reports which are complete in themselves but restrictive in their treatment of a subject. Analogous to monographs but not so comprehensive in scope or definitive in treatment of the subject area. Often serve as a vehicle for final reports of work performed at NIST under the sponsorship of other government agencies.

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National Institute of Standards and Technology
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